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Wood, Jr.

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(54) **METHOD OF ADDRESSING MESSAGES,
METHOD OF ESTABLISHING WIRELESS
COMMUNICATIONS, AND
COMMUNICATIONS SYSTEM**

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(56) References Cited

U.S. PATENT DOCUMENTS

4,075,632	2/1978	Baldwin et al. .	
4,862,453	8/1989	West et al. .	
4,926,182	5/1990	Ohta et al. .	
5,142,694	8/1992	Jackson et al.	455/67.1
5,365,551	11/1994	Snodgrass et al. .	
5,479,416	12/1995	Snodgrass et al. .	
5,500,650	3/1996	Snodgrass et al. .	
5,583,850	12/1996	Snodgrass et al. .	
5,608,739	3/1997	Snodgrass et al. .	
5,621,412	4/1997	Sharpe et al. .	
5,625,628	4/1997	Heath .	
5,627,544	5/1997	Snodgrass et al. .	
5,649,296	7/1997	MacLellan et al. .	
5,805,586	9/1998	Perrault et al.	370/346

5,841,770	11/1998	Snodgrass et al.	370/346
5,936,560 *	8/1999	Higuchi	341/106
5,966,471 *	10/1999	Fisher et al.	382/253
6,061,344 *	5/2000	Wood, Jr.	370/346
6,072,801 *	6/2000	Wood, Jr. et al.	370/437
6,104,333	8/2000	Wood, Jr.	341/173
6,118,789 *	9/2000	Wood, Jr.	370/462

FOREIGN PATENT DOCUMENTS

WO 97/48216 12/1997 (WO) 12/56

* cited by examiner

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(57) ABSTRACT

A method of establishing wireless communications between an interrogator and individual ones of multiple wireless identification devices, the method comprising utilizing a tree search method to establish communications without collision between the interrogator and individual ones of the multiple wireless identification devices, a search tree being defined for the tree search method, the tree having multiple levels representing subgroups of the multiple wireless identification devices, the number of devices in a subgroup in one level being half of the number of devices in the next higher level, the tree search method employing level skipping wherein at least one level of the tree is skipped. A communications system comprising an interrogator, and a plurality of wireless identification devices configured to communicate with the interrogator in a wireless fashion, the respective wireless identification devices having a unique identification number, the interrogator being configured to employ a tree search technique to determine the unique identification numbers of the different wireless identification devices so as to be able to establish communications between the interrogator and individual ones of the multiple wireless identification devices without collision by multiple wireless identification devices attempting to respond to the interrogator at the same time, wherein levels of the tree are occasionally skipped.

26 Claims, 3 Drawing Sheets

